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Post Fire Vegetation Recovery in Greece after the large Drought event of 2007

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Fire is a natural factor of Mediterranean ecosystems. However, fire regimes in the European Mediterranean areas have been changing in the last decades, mainly due to land-use changes and climate driven factors possibly associated with climatic warming (e.g. decline of precipitation, increasing temperatures but also higher frequency of heatwaves). In Greece, the fire season of 2007 was particularly devastating, achieving the new all-time record of estimated burnt area (225 734 ha), since 1980. Additionally, we must stress that prior to the summer fire season in 2007, Greece suffered an exceptional drought event. This severe drought had a strong negative impact in vegetation dynamics. Since water availability is a crucial factor in post-fire vegetation recovery, it is desirable to assess the impact that such water-stress conditions had on fire sensitivity and post-fire vegetation recovery.
Based on monthly values of NDVI, at the 1km×1km spatial scale, as obtained from the VEGETATION-SPOT5 instrument, from 1999 to 2010, large burnt scars are identified in Greece, during 2007 fire season. Vegetation recovery is then assessed based on a mono parametric regression model originally developed by Gouveia et al. (2010) to identify large burnt scars in Portugal during the 2003 fire season and after applied to 2005 fire season (Bastos et al., 2012). Some large burnt areas are selected and the respective NDVI behaviour is monitored throughout the pre and the post fire period. The vegetation dynamics during the pre-fire period is analysed and related to the extreme climatic events that characterised the considered period. An analysis is made of the dependence of recovery rates on land cover types and fire damage. Finally results are compared to results already obtained for Portugal (Gouveia et al. 2010).
This work emphasises the use of a simple methodology, when applied to low resolution satellite imagery in order to monitor vegetation recovery after large fires events over distinct regions of Mediterranean Europe.

Gouveia C., DaCamara C.C, Trigo R.M. (2010). "Post-fire vegetation dynamics in Portugal". Natural Hazards and Earth System Sciences, 10, 4, 673-684.
Bastos A., Gouveia C., DaCamara C.C., and Trigo R.M.: Modelling post-fire vegetation recovery in Portugal.Biogeosciences, 8, 4559-4601, 2011.